

PERCEIVED EFFECT OF POLLUTANTS ON VEGETABLE PRODUCTION IN IBADAN, OYO STATE, NIGERIA

*AKINBEBIJE, P. O. and OYESOLAO. B.

Department of Agricultural Extension and Rural Development, University of Ibadan, Nigeria

*Corresponding author: *auntypelu@yahoo.com*,

ABSTRACT

This study seeks to determine the perceived effect of pollutants on vegetable production in Ibadan, Oyo state, Nigeria. The study was carried out in two urban local government areas (Egbeda and South-West) in Ibadan. Stratified sampling was used in selecting one hundred and ten respondents for the study. Both qualitative and quantitative methods were used in data collection. Data were analyzed using both descriptive and inferential statistics such as Chi-square, PPMC and ANOVA. Majority (82.7%) of vegetable farmers are young adult females (66.0%), married (79.1%), Muslims (54.5%) and had one form of formal education or the other (88.2%). The unavailability of land mass has made most farmers produce on a low (48.2%) scale. There was significant difference ($p < 0.05$) in the perception of vegetable farmers in industrial and non-industrial areas ($F = 17.19$). Also, educational attainment ($x^2 = 0.002$) was significantly related to perceived effect of pollutants while sex ($x^2 = 0.87$), marital status ($x^2 = 0.62$) and religion ($x^2 = 0.64$) were not significantly related. It was recommended that there should be increased awareness programmes, like seminars and workshops, by extension officers to farmers, so as to raise their knowledge of the effects of pollutants on production.

Key words: Industrialization, environmental pollution, perceived effect

Introduction

One of the greatest problems that the world is facing today is that of environmental pollution, increasing with every passing year and causing great and irreparable damage to the earth. The ever increasing population in and around cities, coupled with the economic collapse of many regions of the world, has led to a tremendous increase in cities involved in urban agriculture. Industrialization, the hallmark of urbanization, is known to reduce land mass available for urban agriculture and increases pollutants in the environment. Industries generate a lot of waste, particularly chemical and toxic waste and ash. The industries make private arrangement for the disposal of their waste, with little or no monitoring. Groundwater pollution is also a possibility, as companies do not take precautions at disposal sites to supervise and ensure proper sanitary conditions (Alimi and Manyong, 2000).

Farmers have always managed to cultivate available land mass, not minding the effects of industrialization, so as to be able to supplement both their diet and income. It is known that industrial growth is accompanied by air, noise and water pollution, as well as soil exhaustion (CIA, 2011). Tremendous increase in energy production and consumption has formed elements of this environmental deterioration.

Though pollution from industrial areas may not present problems individually, and thus is not subject to controls or environmental restrictions, it can create substantial problems through cumulative effects. Industrial pollution has been and continues to be, a major factor causing the degradation of the environment around us, affecting the water we use, the air we breathe and the soil we live on. As long as localization of industry could be an advantage for economic purposes, it also carries along the hazard of

environmental pollution with it (Ogedengbe and Akinbile, 2006). Therefore without appropriate management and monitoring of resources, negative environmental effects of urban agriculture can be imposed on the society. There is thus the need to ascertain farmers' knowledge of these different kinds of pollution on their production. Consequently, the following objectives were addressed in this study:

- a) identify the personal characteristics of the respondents in the study area
- b) ascertain what respondents perceive to be the effect of pollutants on vegetable production;
- c) ascertain the sources of information of respondents on their horticultural activities;
- d) identify the adaptation strategies adopted by the respondents

Methodology

This study was carried out in two industrial Estates within Ibadan. They are Oluyole Industrial Estate and Olubadan Industrial Estate. Oluyole Industrial Estate is located in the South-West Local Government Area of Ibadan and it is predominantly occupied by various industries that use heavy machines and equipment. These industries include 7Up Bottling Company, Procter & Gamble, Zartech, Sumal, Interpak, Steel Works, Lithochrome and Yale. On the other hand, Olubadan Industrial Estate is situated in Egbeda Local Government Area of Ibadan. Industries located within it include Premier Agro Industries, Nigerian Breweries Ltd., Sword Sweet Confectionery, Ashima Ltd. (Dana House).

Multi-stage sampling was used in selecting 110 respondents from a total of 343, for the study. Two industrial estates were purposively selected, because they are needed for the study. These are Oluyole Industrial Estate from Ibadan South-West Local Government Area and Olubadan Industrial Estate from Egbeda Local Government Area. The selected local government areas were then sub-divided into both industrial and non-industrial areas. The non-industrial respondents were chosen by

randomly selecting 20% (35) from the registered vegetable farmers of 175 in Egbeda local government and 40% (35) from the registered vegetable farmers of 88 in Oluyole local government. Respondents from industrial areas were chosen using snowball technique. The technique was used to get a sampling frame of 40 from each local government and 50% (20) were randomly selected.

Information on personal characteristics, perceived effect of pollutants on vegetable production, sources of information and adaptation strategies of respondents were collected using a pretested structured questionnaire. Five-point Likert-scaled items were used to measure the perceived effect of pollutants on vegetable production. Mean value of each item were generated and used to get the perception of vegetable famers about industrial pollution in the study areas. An interviewer-assisted method was employed, after informed consent had been obtained from the respondents. Three personnel collected data over a 4 week period in March 2011. Data were analyzed with SPSS version 15.0 . Frequencies were generated and associations explored with Chi-square tests, PPMC and ANOVA. The level of significance was set to 5%.

Results and Discussion

Personal Characteristics of Respondents

Table 1 shows that majority of the respondents (82.7%) are within the age bracket of 30-49 years. The implication of this finding is that urban agriculture is practised mainly by youths and young adults, when they are still strong enough to handle agricultural activities. This means that many youths and young adults are involved in agriculture due to unemployment in the society. Thus there is the need for more job creation for these young talents, if they are not to become burden to the society, since their sense of responsibility at this age is very high and they are willing to explore various options that could ensure a stable source of income.

Also, 60% of the respondents across the local governments were females. The implication of this is that more females are involved in the practice of urban agriculture. This is in line with Ajayi , Farinde and Laogun (2003) that agree that there are more women involved in the practice of urban agriculture, especially vegetable production.

The table further reveals that more of the respondents from South-West (38.2%) and Egbeda (40.9%) were married. However, 79.1% of respondents across the local governments were married. Akinbile, (2007) asserted that “marriage is an important factor in the livelihood of individuals”. This assertion was corroborated by the findings in Table 1. Also, due to the fact that majority of

the respondents were married, they will be able to provide the necessary vitamins needed in their family's diet. This is a fulfillment of one of the aims of urban agriculture which is food security as stated by FAO (2000).

Only 11.8% across the local governments had no formal education at all. The implication of this is that more educated people are involved in urban agriculture across the local governments. Also 54.5% practice Islam, 40.9% practice Christianity while the remaining 4.5% are traditional worshippers. This means that the two orthodox religions i.e. Islam and Christianity are popular among the respondents in the study area.

Table 1 Distribution of Respondents According to their Personal Characteristics

Personal Characteristics	Variables	South-West Freq (%)	Egbeda Freq (%)	Across Local Governments Freq (%)
Age	20-29	8 (7.3)	3 (2.7)	11 (10)
	30-39	24 (21.8)	22 (20)	46 (41.8)
	40-49	20 (18.2)	25 (22.7)	45 (40.9)
	50-59	3 (2.7)	5 (4.5)	8 (7.3)
Sex	Male	19 (17.3)	25 (22.7)	44 (40)
	Female	36 (32.7)	30 (27.3)	66 (60)
Marital Status	Single	2 (1.8)	3 (2.7)	5 (4.5)
	Married	42 (38.2)	45 (40.9)	87 (79.1)
	Divorced	8 (7.3)	6 (5.4)	14 (12.7)
	Widowed	3 (2.7)	1 (0.9)	4 (3.6)
Educational Qualification	No formal	7 (6.4)	6 (5.4)	13 (11.8)
	Primary	15 (13.6)	19 (17.3)	34 (30.9)
	Secondary	14 (12.7)	20 (18.2)	34 (30.9)
	Adult Literacy	18 (16.4)	7 (6.4)	25 (22.7)
	Tertiary	1 (0.9)	3 (2.7)	4 (3.6)
Religion	Christianity	21 (19.1)	24 (21.8)	45 (40.9)
	Islam	31 (28.2)	29 (26.3)	60 (54.5)
	Traditional	3 (2.7)	2 (1.8)	5 (4.5)

Field Survey, 2011

Perception of farmers

Respondents with a total perception score less than or equal to 85 are regarded as having low perception while respondents with a total perception score greater or equal to 86 are regarded as having high perception. Majority of the respondents from South-West (61.8%) and Egbeda (58.2%) have high perception of

the effect of pollutants (Table 2). Across the local governments, 60% of the respondents also have high perception of the effect of pollutants. The implication of this is that respondents understand the damage that the presence of pollutants may have on their production activities. They are also aware of the extra cost they have to incur to prevent these pollutants from affecting the yield of their crops and even its quality.

Table 2 Distribution of Perception level of respondents

Perception Level	South-West Freq (%)	Egbeda Freq (%)	Across Local Governments Freq (%)
Low	21 (38.2)	23 (41.8)	44 (40.0)
High	34 (61.8)	32 (58.2)	66 (60.0)
Total	55 (100)	55 (100)	110 (100)

Source: Data analysis, 2012

**3.2 Perceived Effect of Pollutants on Farmers in Industrial Areas of Oyo State
n = 110**

Table 2 Distribution of Perception of respondents

Perception Statement	Responses	South-West Freq (%)	Egbeda Freq (%)	Total Freq (%)
Odour from industrial effluent prevent me from working on the farm	Strongly disagree	9 (8.2)	10 (9.1)	19 (17.3)
	Disagree	9 (8.2)	4 (3.6)	13 (11.8)
	Undecided	31 (28.2)	28 (25.5)	59 (53.6)
	Agree	3 (2.7)	5 (4.5)	8 (7.3)
	Strongly agree	3 (2.7)	8 (7.3)	11 (10)
Due to the discharge of industrial effluent, land fertility becomes reduced	Strongly disagree	8 (7.3)	2 (1.8)	10 (9.1)
	Disagree	7 (6.4)	6 (5.5)	13 (11.8)
	Undecided	21 (19.1)	30 (27.3)	51 (46.4)
	Agree	14 (12.7)	4 (3.6)	18 (16.4)
	Strongly agree	5 (4.5)	13 (11.8)	18 (16.4)
Industrial water spillage to farms is prevalent	Strongly disagree	10 (9.1)	10 (9.1)	20 (18.2)
	Disagree	13 (11.8)	9 (8.2)	22 (20.0)
	Undecided	18 (16.4)	1 (0.9)	19 (17.3)
	Agree	10 (9.1)	31 (28.2)	41 (37.3)
	Strongly agree	4 (3.6)	4 (3.6)	8 (7.3)
Discharge of industrial effluents does not lead to land degradation	Strongly disagree	2 (1.8)	7 (6.4)	9 (8.2)
	Disagree	2 (1.8)	5 (4.5)	7 (6.4)
	Undecided	31 (28.2)	10 (9.1)	41 (37.3)
	Agree	11 (10.0)	14 (12.7)	25 (22.7)
	Strongly agree	9 (8.2)	19 (17.3)	28 (25.5)
Improper industrial effluent disposal is common	Strongly disagree	1 (0.9)	3 (2.7)	4 (3.6)
	Disagree	2 (1.8)	9 (8.2)	11 (10.0)
	Undecided	29 (26.4)	5 (4.5)	34 (30.9)
	Agree	17 (15.5)	29 (26.4)	46 (41.8)
	Strongly agree	6 (5.5)	9 (8.2)	15 (13.6)
Noise pollution from industries leads to mental tension	Strongly disagree	3 (2.7)	12 (10.9)	15 (13.6)
	Disagree	5 (4.5)	8 (7.3)	13 (11.8)
	Undecided	22 (20.0)	5 (4.5)	27 (24.5)
	Agree	6 (5.5)	25 (22.7)	31 (28.2)
	Strongly agree	19 (17.3)	5 (4.5)	24 (21.8)
Farms become waterlogged from improper sewage disposal	Strongly disagree	3 (2.7)	7 (6.4)	10 (9.1)
	Disagree	6 (5.5)	9 (8.2)	15 (13.6)
	Undecided	1 (0.9)	3 (2.7)	4 (3.6)
	Agree	4 (3.6)	5 (4.5)	9 (8.2)
	Strongly agree	41 (37.3)	31 (28.2)	72 (65.5)
Due to noise from machines, I always experience headache	Strongly disagree	5 (4.5)	8 (7.3)	13 (11.8)
	Disagree	12 (10.9)	13 (11.8)	25 (22.7)
	Undecided	13 (11.8)	3 (2.7)	16 (14.5)
	Agree	18 (16.4)	10 (9.1)	28 (25.5)
	Strongly agree	7 (6.4)	21 (19.1)	28 (25.5)
I experience nasal discharge due to polluted air that I breathe in	Strongly disagree	4 (3.6)	10 (9.1)	14 (12.7)
	Disagree	7 (6.4)	8 (7.3)	15 (13.6)
	Undecided	0 (0)	0 (0)	0 (0)
	Agree	6 (5.5)	8 (7.3)	14 (12.7)
	Strongly agree	38 (34.5)	29 (26.4)	67 (60.9)
Skin irritation is an effect of gaseous industrial effluent	Strongly disagree	5 (4.5)	10 (9.1)	15 (13.6)
	Disagree	4 (3.6)	7 (6.4)	11 (10.0)
	Undecided	18 (16.4)	3 (2.7)	21 (19.1)
	Agree	14 (12.7)	4 (3.6)	18 (16.4)
	Strongly agree	14 (12.7)	31 (28.2)	45 (40.9)

Perception Statement	Responses	South-West Freq (%)	Egbeda Freq (%)	Total Freq (%)
Regulating offensive discharge lowers the incidence of cough	Strongly disagree	4 (3.6)	10 (9.1)	14 (12.7)
	Disagree	0 (0)	2 (1.8)	2 (1.8)
	Undecided	3 (2.7)	1 (0.9)	4 (3.6)
	Agree	9 (8.2)	9 (8.2)	18 (16.4)
	Strongly agree	39 (35.5)	33 (30.0)	72 (65.5)
Smell from industries does not have any effect on me	Strongly disagree	11 (10.0)	6 (5.5)	17 (15.5)
	Disagree	6 (5.5)	10 (9.1)	16 (14.5)
	Undecided	22 (20.0)	15 (13.6)	37 (33.6)
	Agree	7 (6.4)	9 (8.2)	16 (14.5)
	Strongly agree	9 (8.2)	15 (13.6)	24 (21.8)
When my farm becomes waterlogged, it is simply because the drainage is bad	Strongly disagree	2 (1.8)	4 (3.6)	6 (5.5)
	Disagree	0 (0)	1 (0.9)	1 (0.9)
	Undecided	0 (0)	0 (0)	0 (0)
	Agree	2 (1.8)	5 (4.5)	7 (6.4)
	Strongly agree	51 (46.4)	45 (40.9)	96 (87.3)
The industries around dispose their effluent properly and adequately	Strongly disagree	8 (7.3)	10 (9.1)	18 (16.4)
	Disagree	14 (12.7)	18 (16.4)	32 (29.1)
	Undecided	28 (25.5)	19 (17.3)	47 (42.7)
	Agree	2 (1.8)	4 (3.6)	6 (5.5)
	Strongly agree	3 (2.7)	4 (3.6)	7 (6.4)
I am indifferent to the sound of machines from the industries	Strongly disagree	7 (6.4)	14 (12.7)	21 (19.1)
	Disagree	5 (4.5)	5 (4.5)	10 (9.1)
	Undecided	23 (20.9)	14 (12.7)	37 (33.6)
	Agree	10 (9.1)	10 (9.1)	20 (18.2)
	Strongly agree	10 (9.1)	12 (10.9)	22 (20.0)
Gases released into the atmosphere from industries do not cause rashes or eczema	Strongly disagree	4 (3.6)	6 (5.5)	10 (9.1)
	Disagree	2 (1.8)	5 (4.5)	7 (6.4)
	Undecided	20 (18.2)	12 (10.9)	32 (29.1)
	Agree	19 (17.3)	15 (13.6)	34 (30.9)
	Strongly agree	10 (9.1)	17 (15.5)	27 (24.5)
Reduced soil fertility does not cause stunted growth	Strongly disagree	4 (3.6)	4 (3.6)	8 (7.3)
	Disagree	1 (0.9)	3 (2.7)	4 (3.6)
	Undecided	2 (1.8)	3 (2.7)	5 (4.5)
	Agree	7 (6.4)	10 (9.1)	17 (15.5)
	Strongly agree	41 (37.3)	35 (31.8)	76 (69.1)
There is yellowing of leaves of my plants due to the presence of industrial effluents	Strongly disagree	3 (2.7)	9 (8.2)	12 (10.9)
	Disagree	8 (7.3)	8 (7.3)	16 (14.5)
	Undecided	23 (20.9)	7 (6.4)	30 (27.3)
	Agree	16 (14.5)	28 (25.5)	44 (40.0)
	Strongly agree	5 (4.5)	3 (2.7)	8 (7.3)
Sewage discharge from homes is an added advantage for my vegetable production	Strongly disagree	8 (7.3)	18 (16.4)	26 (23.6)
	Disagree	10 (9.1)	13 (11.8)	23 (20.9)
	Undecided	30 (27.3)	15 (13.6)	45 (40.9)
	Agree	5 (4.5)	6 (5.5)	11 (10.0)
	Strongly agree	2 (1.8)	3 (2.7)	5 (4.5)
The best area for my production is along the river close to industries	Strongly disagree	6 (5.5)	13 (11.8)	19 (17.3)
	Disagree	2 (1.8)	14 (12.7)	16 (14.5)
	Undecided	35 (31.8)	17 (15.5)	52 (47.3)
	Agree	5 (4.5)	6 (5.5)	11 (10.0)
	Strongly agree	7 (6.4)	5 (4.5)	12 (10.9)
My vegetables wither quickly on the farm because of dust reducing its photosynthetic area	Strongly disagree	6 (5.5)	7 (6.4)	13 (11.8)
	Disagree	13 (11.8)	15 (13.6)	28 (25.5)
	Undecided	29 (26.4)	26 (23.6)	55 (50.0)
	Agree	6 (5.5)	5 (4.5)	11 (10.0)
	Strongly agree	1 (0.9)	2 (1.8)	3 (2.7)
The freshness of my vegetable is so evident despite the presence of pollutants	Strongly disagree	2 (1.8)	5 (4.5)	7 (6.4)
	Disagree	4 (3.6)	5 (4.5)	9 (8.2)
	Undecided	33 (30.0)	28 (25.5)	61 (55.5)
	Agree	10 (9.1)	13 (11.8)	23 (20.9)
	Strongly agree	6 (5.5)	4 (3.6)	10 (9.1)
I incur extra cost to ensure that pollutants don't affect my plants	Strongly disagree	39 (35.5)	37 (33.6)	76 (69.1)
	Disagree	11 (10.0)	12 (10.9)	23 (20.9)
	Undecided	1 (0.9)	0 (0)	1 (0.9)
	Agree	3 (2.7)	3 (2.7)	6 (5.5)
	Strongly agree	1 (0.9)	3 (2.7)	4 (3.6)
In the absence of pollutants, I will have increased yield	Strongly disagree	1 (0.9)	3 (2.7)	4 (3.6)
	Disagree	1 (0.9)	2 (1.8)	3 (2.7)
	Undecided	2 (1.8)	2 (1.8)	4 (3.6)
	Agree	8 (7.3)	6 (5.5)	14 (12.7)
	Strongly agree	43 (39.1)	42 (38.2)	85 (77.3)

Perception Statement	Responses	South-West Freq (%)	Egbeda Freq (%)	Total Freq (%)
My yield is not affected by pollutants of any kind	Strongly disagree	12 (10.9)	5 (4.5)	17 (15.5)
	Disagree	3 (2.7)	5 (4.5)	8 (7.3)
	Undecided	30 (27.3)	30 (27.3)	60 (54.5)
	Agree	7 (6.4)	11 (10.0)	18 (16.4)
	Strongly agree	3 (2.7)	4 (3.6)	7 (6.4)
Though I don't like pollutants, I don't care if they exist or not	Strongly disagree	13 (11.8)	8 (7.3)	22 (20.0)
	Disagree	0 (0)	2 (1.8)	2 (1.8)
	Undecided	30 (27.3)	30 (27.3)	60 (54.5)
	Agree	2 (1.8)	3 (2.7)	5 (4.5)
	Strongly agree	9 (8.2)	12 (10.9)	21 (19.1)

Source: Field Survey, 2011

Information Sources of Respondents

From Table 4, it can be deduced that majority of the respondents from both local governments accept the fact that the common source of information that they always use are experienced farmers. Despite this, majority of the respondents from South-west and Egbeda LGA sometimes use friends and colleagues (27.3%, 37.3% respectively), family members (24.5%, 27.3% respectively) and intuition or trial and error (32.7%, 22.7% respectively) as their sources of information. The implication of this is that most urban farmers don't seek contemporary information from books, journals,

newspapers and magazines. Neither do they also get adequate information from seminars, workshops, training sessions from NGOs, extension agents or the internet. Rather, farmers tend to turn to experienced farmers, friends, colleagues, family members or even trust their sense of intuition as their source of information. This could be due to the fact that these latter sources of information are easier to come by, incurring little or no cost at all. The former sources are also easy to come by, but at a cost that farmers may not be able and/or willing to afford. Thus, they will rather not incur extra cost on sources of information and maximize their profits than incur it and thus reduce the meager profit they get from their agricultural activities.

Table 4: Sources of Information of Respondents

Sources	Never		Rarely		Sometimes		Always	
	South-West Freq %	Egbeda Freq %	South-West Freq %	Egbeda Freq %	South-West Freq %	Egbeda Freq %	South-West Freq %	Egbeda Freq %
Books & Journals	18 (16.4)	26 (23.6)	12 (10.9)	15 (13.6)	11 (10.0)	12 (10.9)	14 (12.7)	2 (1.8)
Newspaper & Magazines	18 (16.4)	24 (21.8)	24 (21.8)	24 (21.8)	12 (10.9)	5 (4.5)	1 (0.9)	2 (1.8)
Friends & Colleagues	- -	- -	5 (4.5)	- -	30 (27.3)	41 (37.2)	20 (18.2)	14 (12.7)
Family members	- -	- -	11 (10.0)	2 (1.8)	27 (24.5)	30 (27.3)	17 (15.5)	23 (20.9)
Intuition, Trial&Error	- -	- -	2 (1.8)	4 (3.6)	36 (32.7)	25 (22.7)	17 (15.5)	26 (23.6)
Experienced farmers	6 (5.5)	2 (1.8)	18 (16.4)	20 (18.2)	5 (4.5)	11 (10.0)	26 (23.6)	22 (20.0)
Seminars & Workshops	21 (19.1)	32 (29.1)	11 (10.0)	12 (10.9)	16 (14.5)	11 (10.0)	7 (6.4)	- -
Training Sessions from NGOs	21 (19.1)	38 (34.5)	14 (12.7)	15 (13.6)	15 (13.6)	1 (0.9)	5 (4.5)	1 (0.9)
Extension agents	33 (30.0)	3 (31.8)	22 (20.0)	16 (14.5)	- -	4 (3.6)	- -	- -
Internet	45 (40.9)	49 (44.5)	3 (2.7)	2 (1.8)	6 (5.5)	2 (1.8)	1 (0.9)	2 (1.8)

Source: Field Survey, 2011.

* Multiple Responses recorded

Adaptation Strategies of Respondents

The use of organic manure is regular and common in both South-West (43.6%) and

Egbeda (40.9%) as majority of their respondents claim to use it always. This is used in replacing lost nutrients in the soil and help to revitalize worn-out soils. Multi-cropping is also an adaptation strategy

practised always across both local governments (62.7%). This fact can be ascertained by the fact that all the respondents cultivate more than one vegetable. This can be used as an adaptive mechanism to combat any form of crop failure that may arise due to the presence of pollutants. Also majority of the respondents (57.3%) believe in always constructing proper drainage as an adaptation strategy in combating the effects of pollutants. A farmland without proper drainage is likely to become waterlogged

which will reduce the pore spaces in the soil, lessen the circulation of air and nutrients, harbour diseases and thus lead to the death of some plants, thereby drastically reducing yield and income of vegetable farmers. Demarcation of farmland is not often used as it is used in preventing indiscriminate dumping of refuse on the farmland and also serve as a form of deterrent to illegal trespasses. It will also help in marking and mapping out farm boundaries.

Table 5: Distribution of Adaptation Strategies of Respondents

Adaptation Strategies	Responses	South-West		Egbeda		Total	
		Freq	%	Freq	%	Freq	%
Use of organic manure	Never	-	-	-	-	-	-
	Rarely	1	0.9	-	-	1	0.9
	Sometimes	6	5.5	-	9.1	16	14.5
	Always	48	43.6	45	81.8	93	84.5
Multicropping	Never	2	1.8	2	1.8	4	3.6
	Rarely	-	-	1	0.9	1	0.9
	Sometimes	24	21.8	12	10.9	36	32.7
	Always	29	26.4	40	36.4	69	62.7
Construction of proper drainage	Never	-	-	3	2.7	3	2.7
	Rarely	10	9.1	9	8.2	19	17.3
	Sometimes	11	10	14	12.7	25	22.7
	Always	34	30.9	29	26.4	63	57.3
Demarcation of farmland	Never	-	-	5	4.5	5	4.5
	Rarely	5	4.5	18	16.4	23	20.9
	Sometimes	38	34.5	28	25.5	66	60.0
	Always	12	10.9	4	3.6	16	14.5
Use of nose guard	Never	6	5.5	10	9.1	16	14.5
	Rarely	8	7.3	10	9.1	18	16.4
	Sometimes	7	6.4	16	14.5	23	20.1
	Always	34	30.9	19	17.3	53	48.2
Chlorination of water	Never	23	20.9	25	22.7	48	43.6
	Rarely	30	27.3	26	23.6	56	50.9
	Sometimes	2	1.8	3	2.7	5	4.5
	Always	-	-	1	0.9	1	0.9
Use of reservoir	Never	44	40.0	34	30.9	78	70.9
	Rarely	5	4.5	6	5.5	11	10.0
	Sometimes	6	5.5	8	7.3	14	12.7
	Always	-	-	7	6.4	7	6.4
Sprinkling water to remove dust	Never	1	0.9	2	1.8	4	3.6
	Rarely	5	4.5	6	5.5	11	10.0
	Sometimes	7	6.4	15	13.6	22	20.0
	Always	42	38.2	31	28.2	73	66.4

Source: Field Survey, 2011.

*** Multiple Responses recorded**

The use of nose guard is useful in places where offensive discharges are being passed. In the field survey conducted and as reported by table 3.5, majority of respondents in both local governments and across them agree that

their use of nose guard is frequent while only respondents in the minority report that they have no use for the nose guard. In South-West, 30.9% always use nose guard and 17.3% in Egbeda do likewise. This is low, therefore confirming Kuponiyi and Adewale (2008) that the frequency of farmers that always use nose guards are low. Across the local governments, 48.2% regard the use of

nose guard as necessary. This means that the average farmer understands that non-usage of nose guard may give rise to unwanted consequences like illness, which may in turn affect production negatively. This is corroborated by the findings of Kuponiyi *et al* (2008)

Majority of the respondents across the local governments (50.9%) accept that they rarely chlorinate the water they use for their farming activities. When further questioned, some of the respondents agree to the fact that water has to be treated but not with chlorine, since the water is not for consumption purposes. The water may sometimes be treated to enhance the growth of plants, with supplements. Only 0.9% across the local government report that their chlorination of water is always, which is a negligible percent.

From Table 5, 70.9% of the respondents across the LGAs agree that the use of reservoir of any form is not necessary. The implication of this finding is that most respondents practice their agricultural activities in places close to water bodies. Therefore, there is no need to store water, as it will be available throughout the season and all through the year round.

Finally from the table, sprinkling of water on plants to remove dust is an adaptation strategy that is practiced by the respondents in varying degrees. Despite their varying responses, a fact to be registered is that majority of the respondents both from South-West (38.2%), Egbeda (28.2%) and across the local governments (66.4%) use this adaptation strategy regularly and always. The implication of this is that respondents employ this method as a means of increasing the photosynthetic area of plant leaves (which could have been reduced by dust settling on them), to enable plants manufacture their own food and in turn increase the yield of respondents in terms of quality and quantity.

From the data collected from the field survey, it was discovered that the lowest adaption strategy score was 10 while the highest adaptation strategy score was 32 and a mean

score of 23.19 was recorded. These were then categorized into low, average and high levels of adaptation using the following intervals: 10-17, 18-24 and 25-32 respectively. The following findings were made. Majority of the respondents (52.8%) use the adaptation strategies on an average scale, while 47.2% use them often. Only 3.6% claim to use these adaptation strategies sparingly. The implication of these is that many farmers know the advantages of using adaptation strategies to combat the effect of pollutants on their production.

4. Conclusion and Recommendation

This study investigated the perceived effect of pollutants on vegetable production in Ibadan, Oyo State. In this study it was discovered that the two study areas which host a significant number of industries felt the impact of pollutants on their production. It was revealed that educational attainment ($\chi^2 = 0.002$) was significantly related to perceived effect of pollutants while sex ($\chi^2 = 0.87$), marital status ($\chi^2 = 0.62$) and religion ($\chi^2 = 0.64$) were not significantly related.

Therefore, there should be increased awareness programmes, like seminars and workshops, by extension officers for farmers, so as to raise their knowledge of the effects of pollutants on production. Farmers and the residents of the area can come together to form an alliance that will be geared towards curbing the menace of pollutants in their areas.

REFERENCES

- Ajayi A. O., A. J. Farinde and E. A. Laogun, (2003). Women Farmers Training needs and their correlates for effective extension programme and poverty reduction in Oyo State, *Nigeria Journal of Extension system.*, Vol. 19(1) pp 91-102.
- Akinbile L.A and A.O. Omotara ,2000. "Changes in the income Generating Activities of Crop Farmers in Odo-Otin

- LGA, Osun State: Implications for poverty alleviation programmes”. *Journal of Agric. Ext. Vol. 4 pp 1-8*
- Akinbile, C.O (2006) Hawked Water Quality and its Health Implications in Akure, Nigeria, *Botswana Journal of Technology, Vol. 15, No 2 pp 70-75*
- Central Intelligence Agency, 2011. The World Factbook <https://www.cia.gov/library/publications/the-world-factbook/fields/2032.html>
- Kuponiyi, F.A and Adewale, J.G, 2008. *African Journal of Food, Agriculture, Nutrition and Development, Vol. 8, No. 4, Dec, 2008, pp. 427-440*